RADIUS CUSTOMER SERVICE

Service Training Program Notes

radius™

5 PROPER INSTALLATION
SOFTWARE

6 R150 R405A
R336 R311

8 CONVERGENCE

9

Section 1
General Installation

- Course Objectives
- Basic Installation Steps
- Information Required When You Call Radius Customer Support
- When Problems Arise...
- Suspected Software Problems

General Installation Course Objectives

- Verify the general contents of a Radius Product kit.
- List the basic installation steps for a Radius kit.
- Describe the procedure to contact Radius Customer Support with required information regarding any kit shortages.
- Perform pre-installation checks on a Macintosh Plus or Macintosh SE.
- Open and prepare a Macintosh Plus or SE for Radius kit installation.
- Perform post installation check for proper operation.
- Identify common installation pitfalls.
- Troubleshoot common installation failures symptomatically.
- Isolate Radius product software incompatibility problems using a step-by-step method.

Basic Installation Steps

- Unbox / Check Contents of Installation Kit
- Open / Prepare Macintosh
- Configure and Install Radius Product
- Install Macintosh Logic Board
- Test
- Reassembly
- Install System Software
- Complete Final System Test

Information Required When You Call Radius Customer Support

- Dealer Information
- Serial number of display and/or PCB
- Part number of board or other part
- Type of system
- Sales order number

When Problems Arise...

- Get a clear idea of the problem and symptoms.
  - ~ Dark Screen
  - ~ Checkerboard Pattern
  - ~ Macintosh Reboots
- Locate the symptom in the Service Manual.
- Determine the failing component.
- Order Radius component through Customer Support.
- Contact Customer Support for troubleshooting assistance.

Suspected Software Problems

NOTE: The latest versions of RadiusWare can be found on AppleLink: 3rd Party Connection > 3rd Party S'ware Updates > Radius S'Ware Updates.

- Start-up from a clean system disk.
- Load and test the selected application.
- Remove INIT files from your normal start up disk.
- Load and test application.
- Return INIT files, alphabetically, one-by-one.
- Contact Customer Support for troubleshooting assistance.

Section 2
Macintosh Plus Installation

- FPD-Plus Video Interface Card (68kHz)

- FPD-Plus Video Interface Card (64kHz)

- FPD-Plus Video Interface Card (Common Chassis)

- Accelerator 16 Plus

FPD-Plus Video Interface Installation Topic Objectives for Macintosh Plus

- List, by part number, the video interface cards that may be found in a Plus system.
- Describe how to recognize each revision of video interface card.
- Name the current ROM version for FPD-Plus video interface card.
- List the part number for each of the current ROM set (128K and 256K).
- Describe how to recognize each FPD display type.
- Name the video interface card(s) that are used with each display type.
- List the jumpers on each video interface card and the purpose of each.
- Describe or demonstrate the procedure to install a video interface card.
- List the most probable cause for each failure symptom discussed.

FPD Models

- 64kHz Display
- 68kHz Display

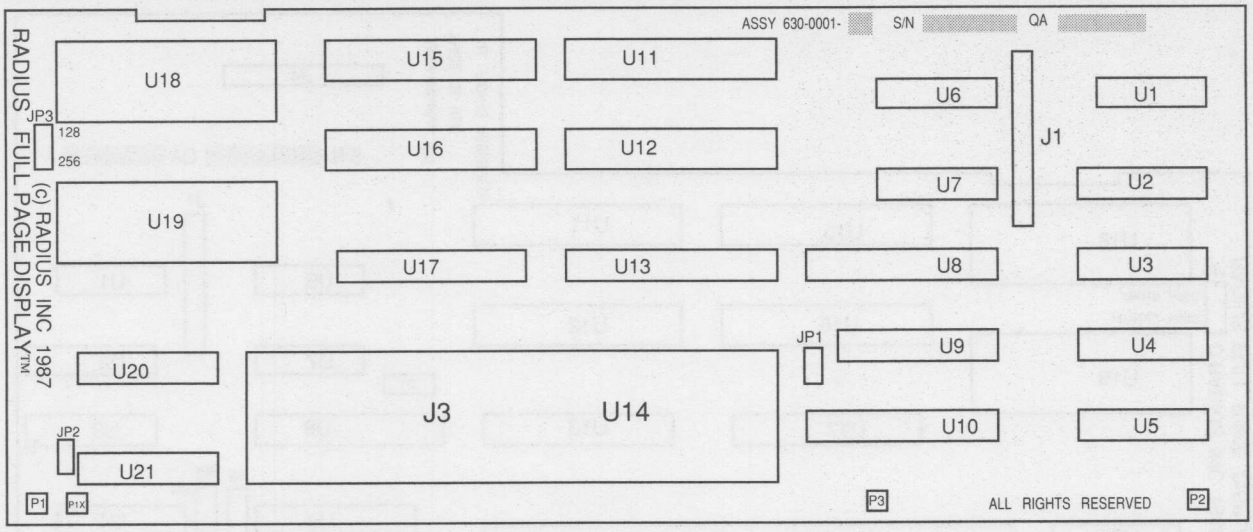


Figure 2-1. FPD-Plus Video Interface Card (68kHz)
630-0001

J1 — Connector for internal video cable.

P1 & P2 — Spring Clips provide Ground and Timing.

JP1 & JP2 — Installed only when used with an Accelerator.

JP3 — Selects ROM size - 128K or 256K

U1 — Crystal - 55.000 for 68kHz Display

J3 & U14 — 68000 Processor or Receptacle for Accelerator

U18 — ROM Low
U19 — ROM High

ROM Upgrade Kit
Part Numbers:
128K — 630-0159
256K — 630-0160

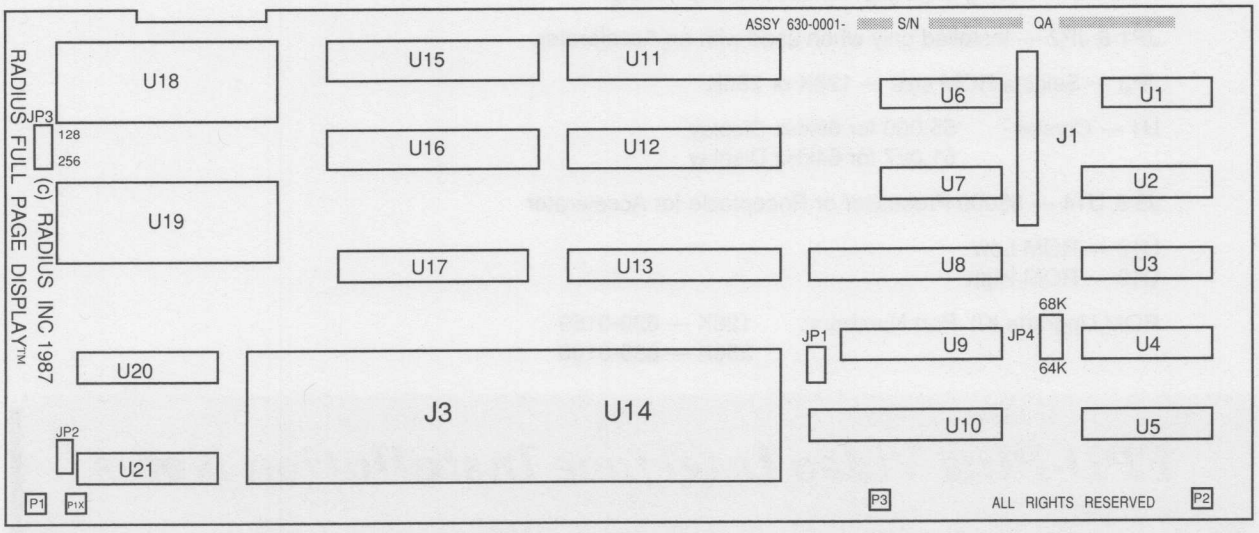


Figure 2-2. FPD-Plus Video Interface Card (64kHz)
630-0034

P1 & P2 — Spring Clips provide Ground and Timing.

JP1 & JP2 — Installed only when used with an Accelerator.

JP3 — Selects ROM size - 128K or 256K

U1 — Crystal - 51.027 for 64Khz Display

J3 & U14 — 68000 Processor or Receptacle for Accelerator

U18 — ROM Low
U19 — ROM High

ROM Upgrade Kit
Part Numbers:
128K — 630-0159
256K — 630-0160

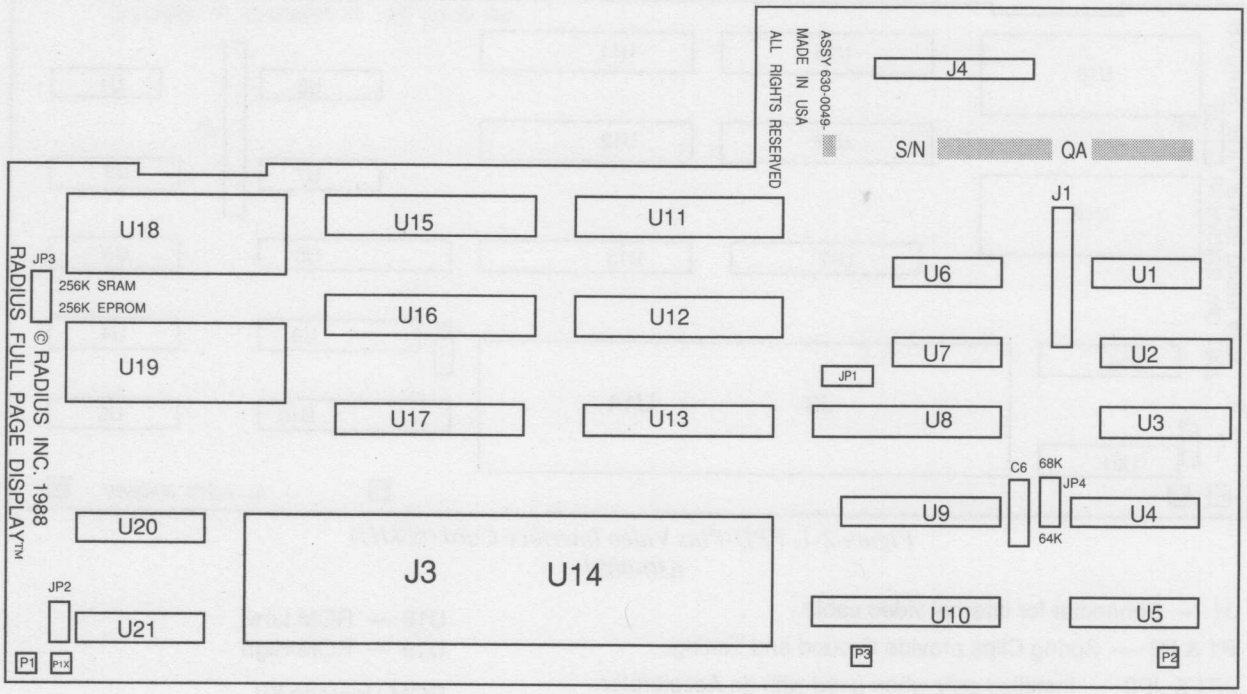


Figure 2-3. FPD-Plus Video Interface Card
630-0049 (64kHz)
630-0001 (68kHz)

COMMON CHASSIS VERSION

P1 & P2 — Spring Clips provide Ground and Timing.

JP1 & JP2 — Installed only when used with an Accelerator.

JP3 — Selects ROM size — 128K or 256K

U1 — Crystal - 55.000 for 68kHz Display
51.027 for 64kHz Display

J3 & U14 — 68000 Processor or Receptacle for Accelerator

U18 — ROM Low
U19 — ROM High

ROM Upgrade Kit Part Numbers: 128K — 630-0159
256K — 630-0160

FPD-Plus Video Interface Installation Notes

Accelerator 16 Installation Topic Objectives For Macintosh Plus

- Identify, by part number, the two configurations of the Accelerator 16 Plus.
- Name the current ROM version used with the Accelerator 16 Plus.
- List the Accelerator 16 Plus interface card jumpers and the purpose of each.
- Describe or demonstrate each of the following procedures:
  - ~ Properly configure the Accelerator 16 Plus when the 68881 coprocessor is, or is not, installed.
  - ~ Set the jumpers on the FPD-Plus video interface card when an Accelerator 16 Plus is installed.
  - ~ Prepare the Accelerator 16 Plus Jumper Card for installation.
  - ~ Properly install an Accelerator 16 Plus.

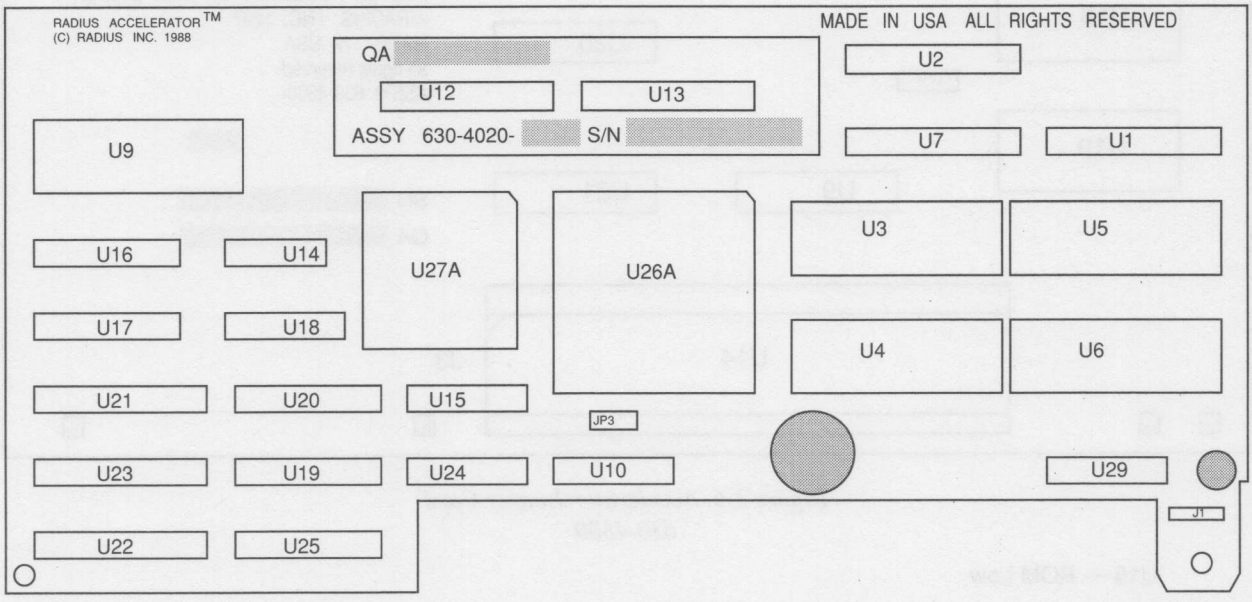


Figure 2-4. Accelerator 16 Plus 630-4020

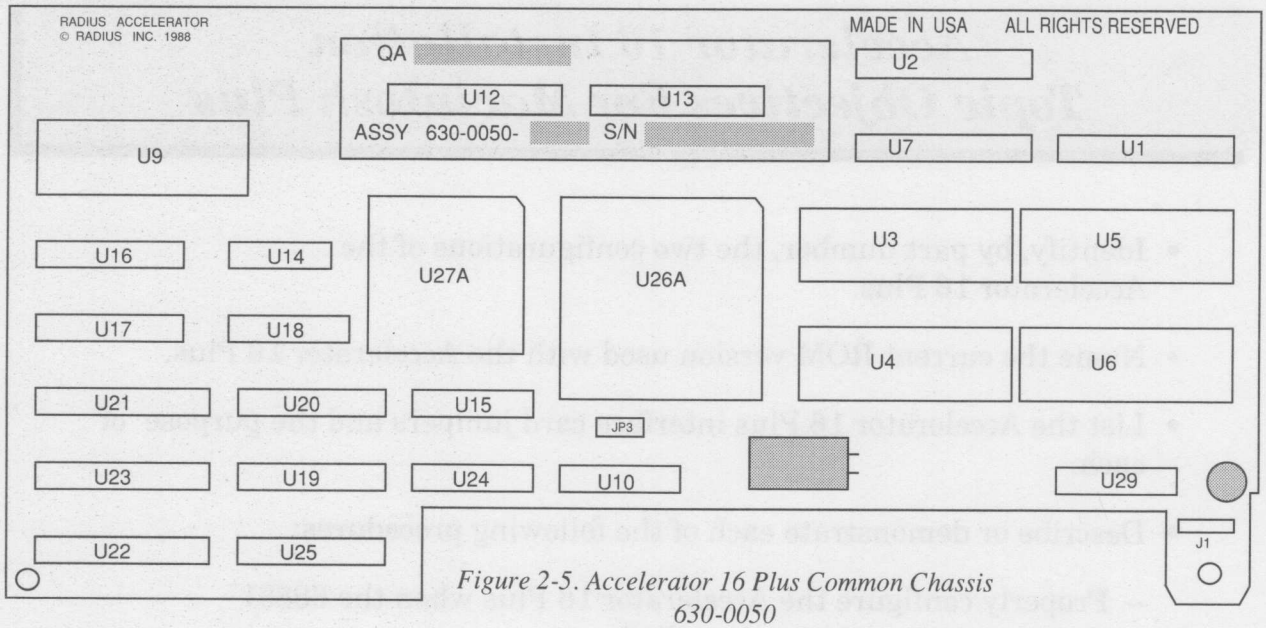


Figure 2-5. Accelerator 16 Plus Common Chassis
630-0050

Currently the only version shipping.

J1 — On the bottom of board, for Power and Fan

J3 — Used in relationship with usage 68881

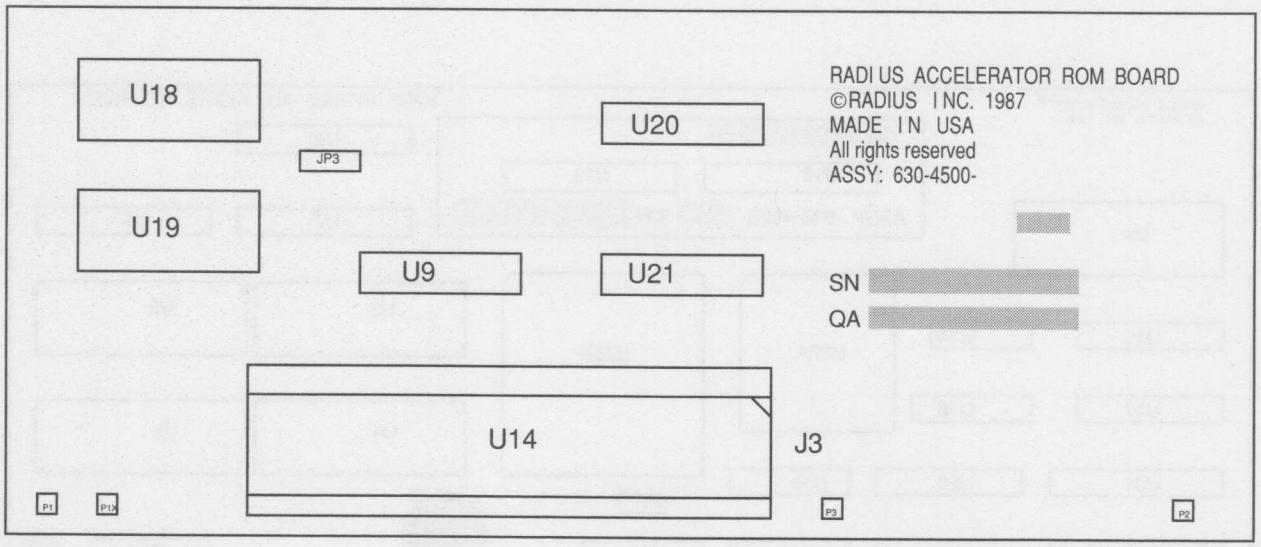


Figure 2-6. Accelerator Jumper Card
630-4500

U18 — ROM Low

U19 — ROM High

ROM Upgrade Kit Part Number: 256K — 630-0111

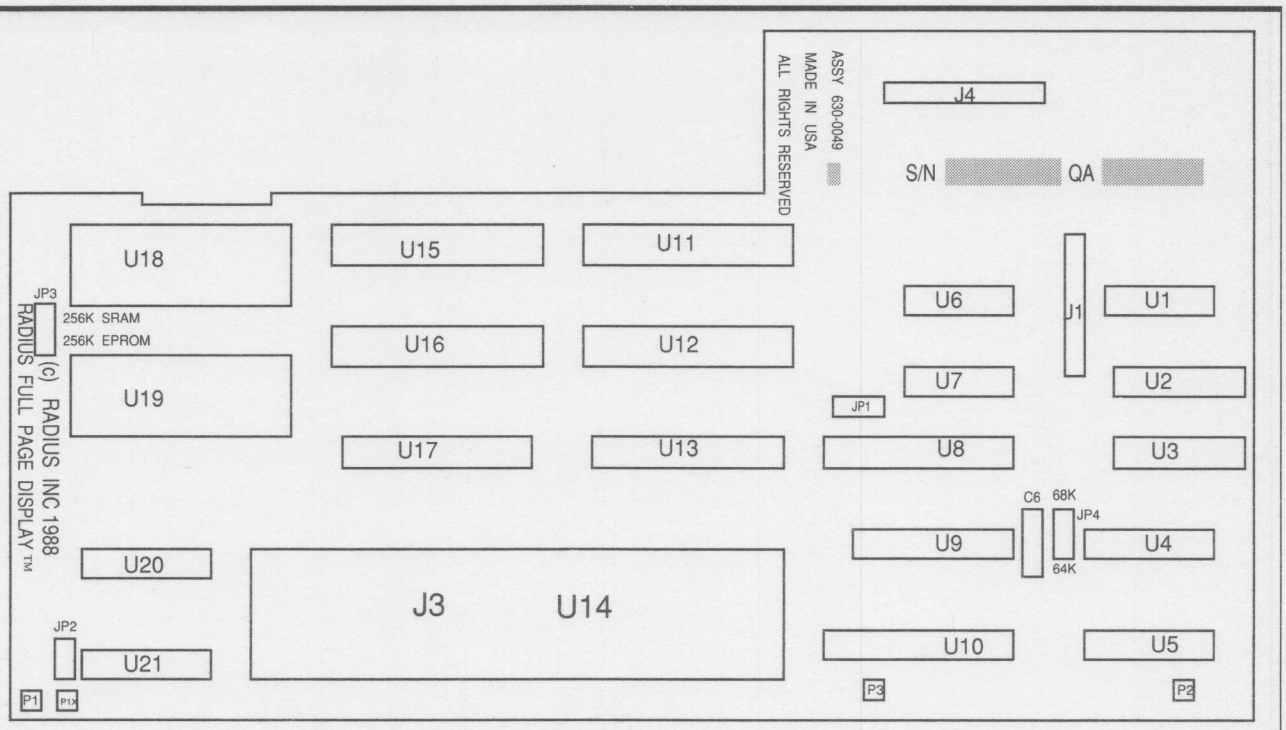
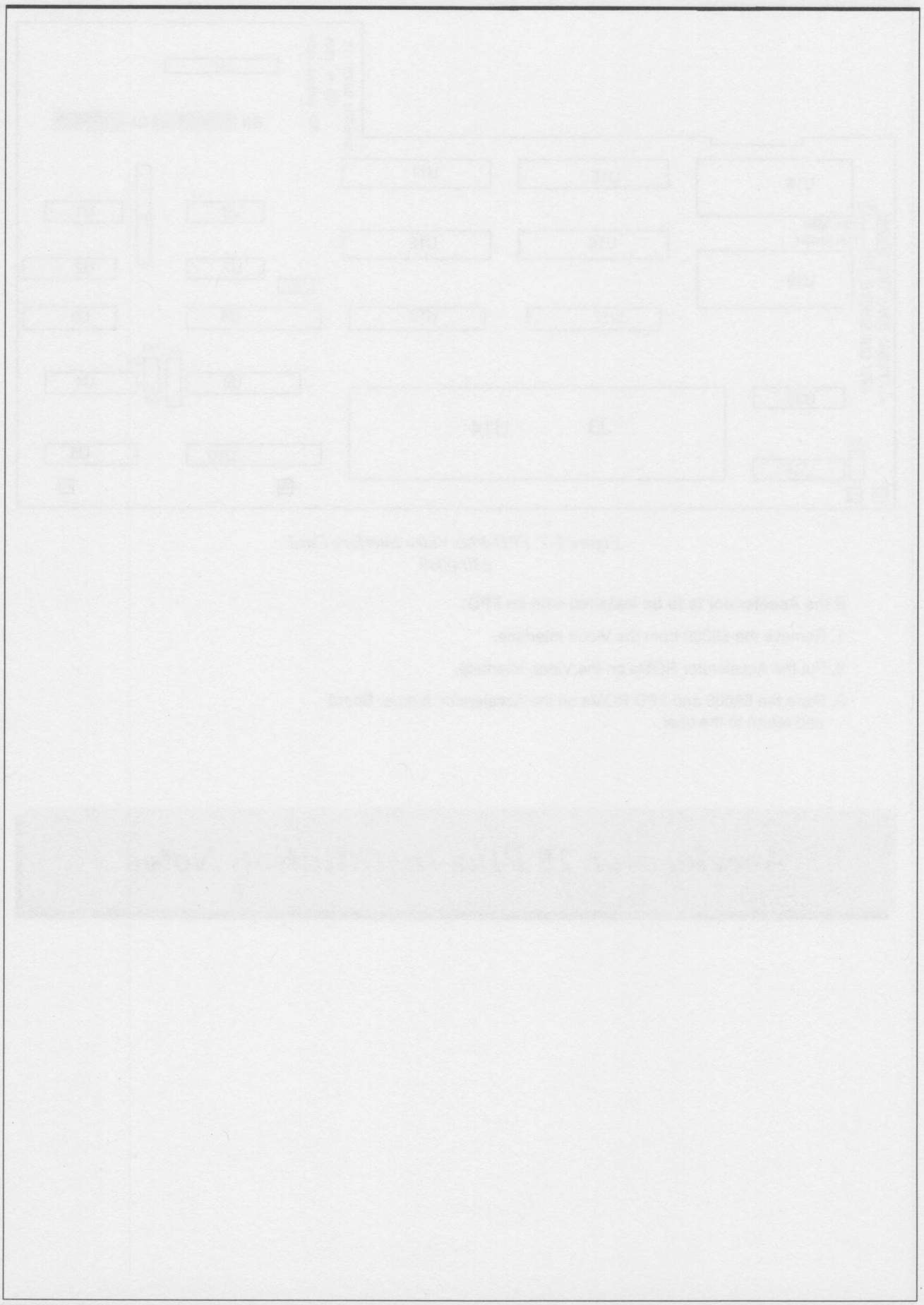


Figure 2-7. FPD-Plus Video Interface Card
630-0049

If the Accelerator is to be installed with an FPD:

1. Remove the 68000 from the Video Interface.
2. Put the Accelerator ROMs on the Video Interface.
3. Store the 68000 and FPD ROMs on the Accelerator Jumper Board and return to the user.

Accelerator 16 Plus Installation Notes



Section 3
Macintosh SE & SE/30 Installation

- SE Accelerator 16
- SE Accelerator 25
- FPD/TPD-SE Video Interface Cards
- FPD/TPD-SE/30 Video Interface Cards

Accelerator 16, Accelerator 25 Installation Topic Objectives For the Macintosh SE

- List, by part number, all versions of the Accelerator interface cards for the Macintosh SE.
- Describe how to recognize each version of the SE Accelerator.
- Identify the current ROM version for the SE Accelerator.
- List the part number for the ROM set.
- List the jumpers on each SE Accelerator, and the purpose of each.
- Describe or demonstrate the procedures to properly configure an SE Accelerator.
- Describe or demonstrate the procedures to install an SE Accelerator.
- List the most probable causes for each failure symptom discussed.

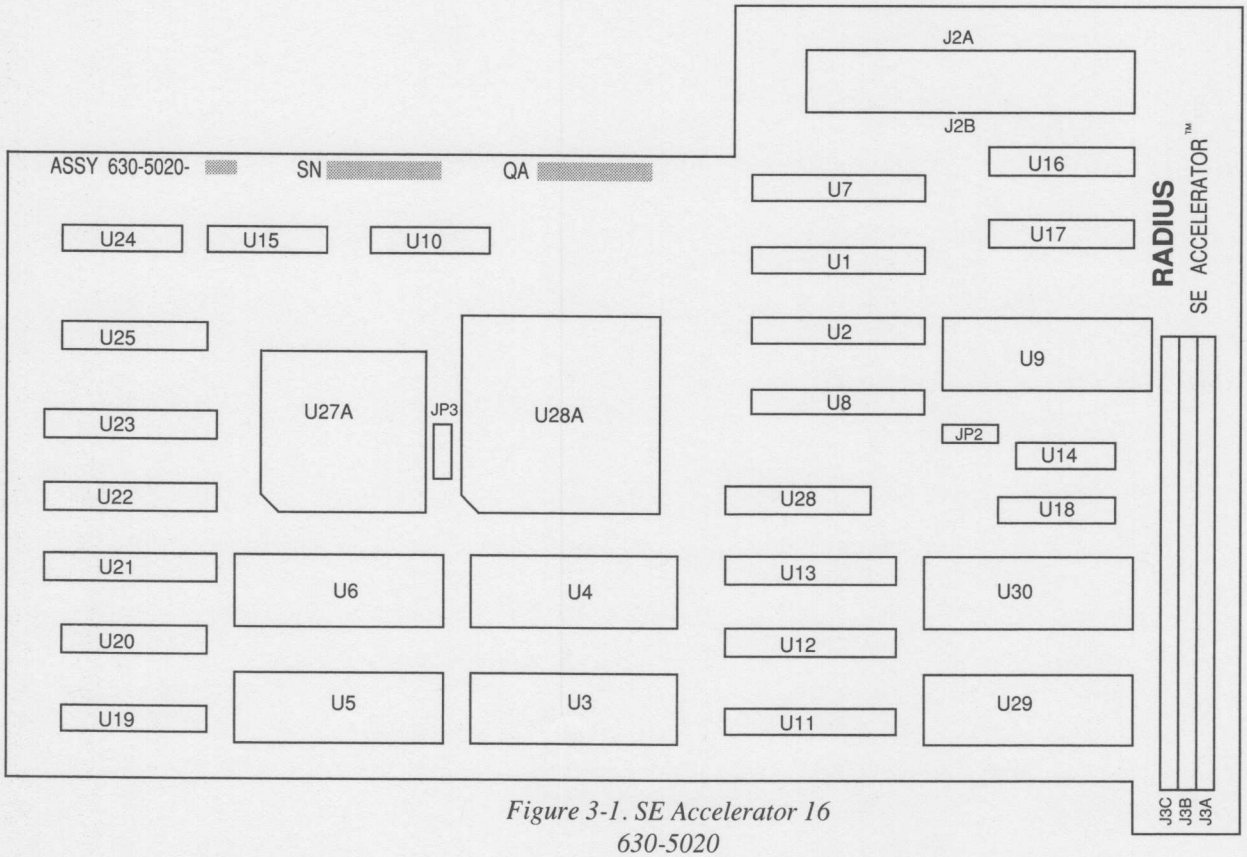


Figure 3-1. SE Accelerator 16 630-5020

JP2 — Selects ROM Size
JP3 — Math Coprocessor select

U29 — ROM Low
U30 — ROM High

ROM Upgrade Kit Part Number:
256K — 630-0157

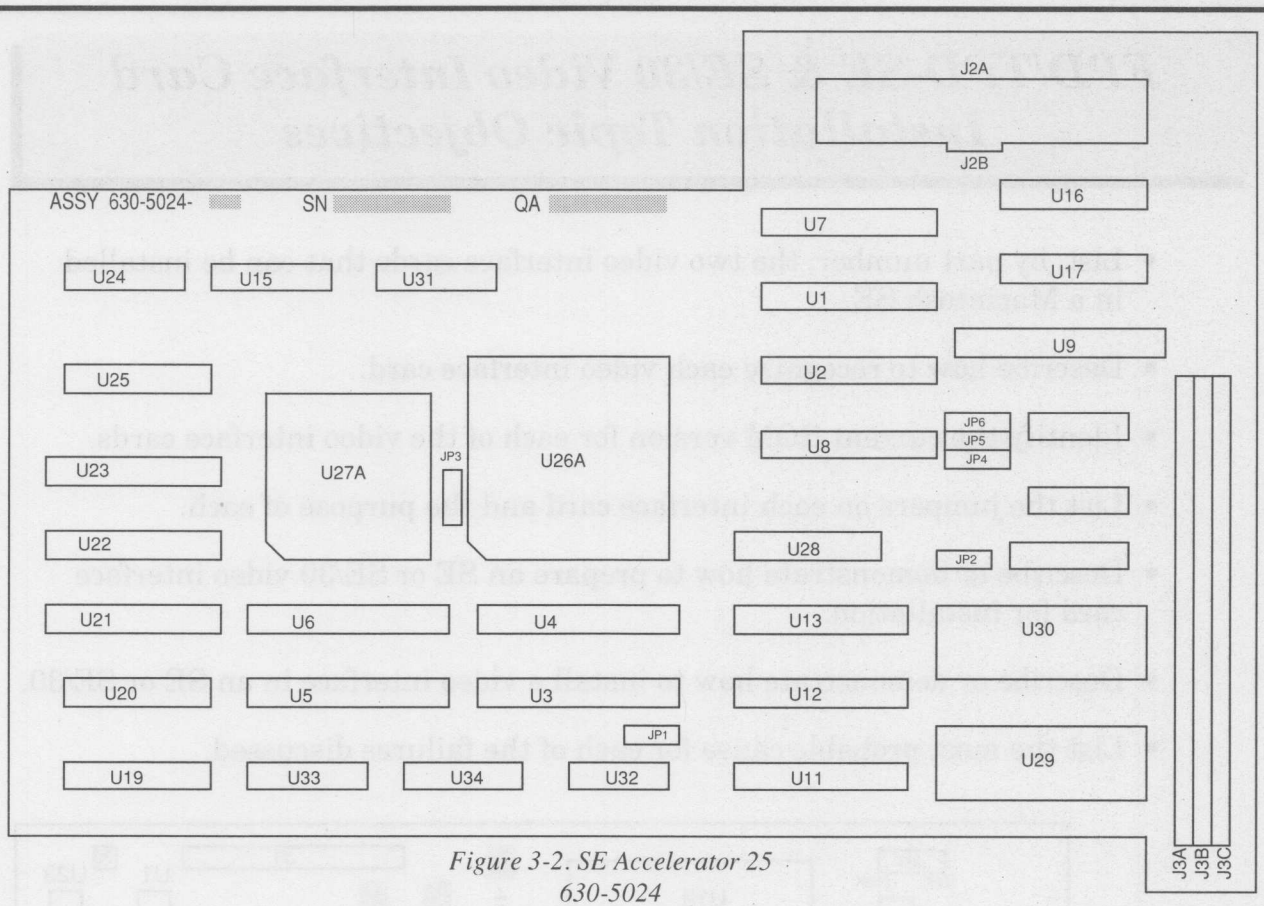


Figure 3-2. SE Accelerator 25
630-5024

JP1 — Selects clock speed of 68881

JP2 — Selects ROM Size

JP3 — 68881 select

JP4, JP5 & JP6 — Set on rightmost pins

U29 — ROM Low

U30 — ROM High

ROM Upgrade Kit Part Number:
256K — 630-0158

SE Accelerator 16 and 25 Installation Notes

FPD/TPD-SE & SE/30 Video Interface Card Installation Topic Objectives

- List, by part number, the two video interface cards that can be installed in a Macintosh SE.
- Describe how to recognize each video interface card.
- Identify the current ROM version for each of the video interface cards.
- List the jumpers on each interface card and the purpose of each.
- Describe or demonstrate how to prepare an SE or SE/30 video interface card for installation.
- Describe or demonstrate how to install a video interface in an SE or SE/30.
- List the most probable cause for each of the failures discussed.

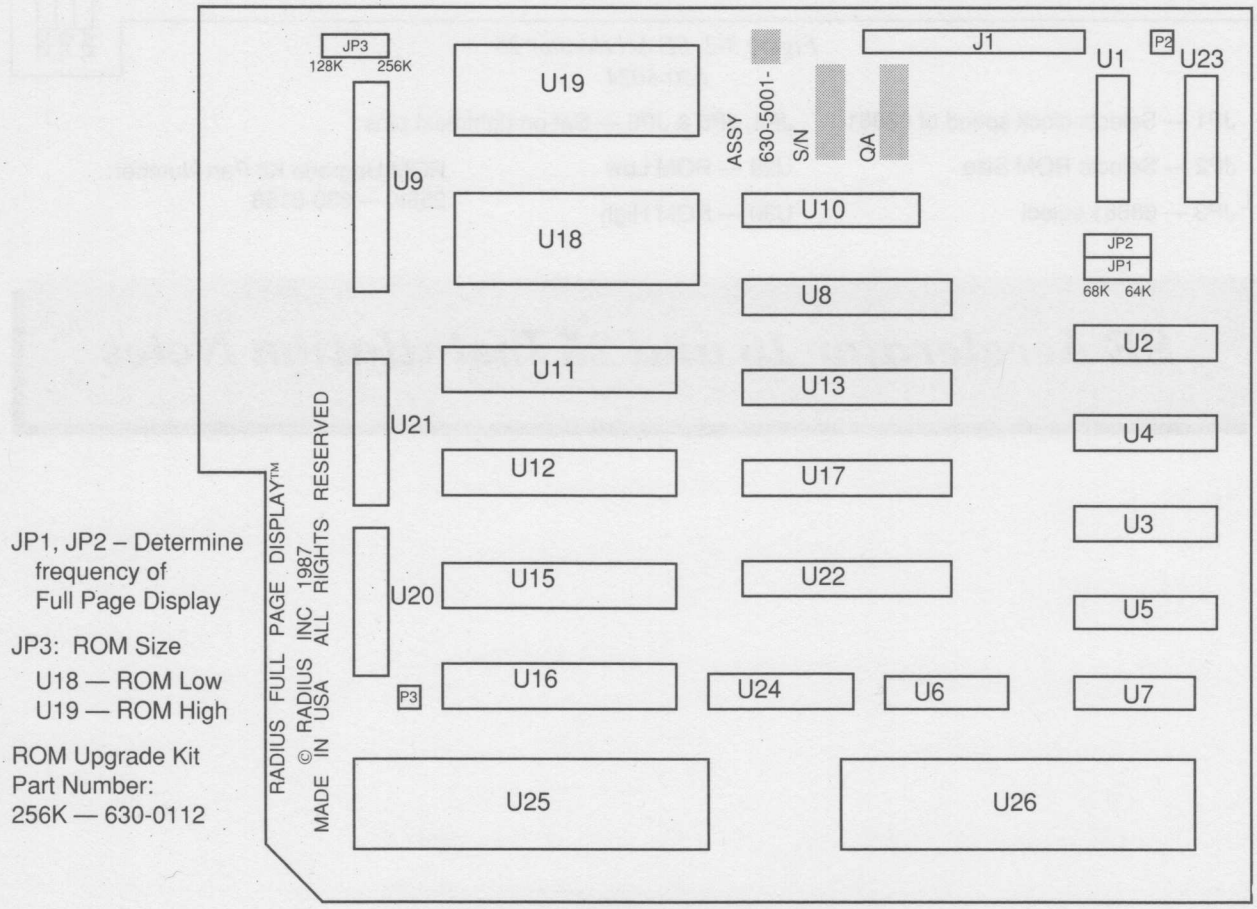


Figure 3-3 FPD-SE Video Interface Card 630-5001

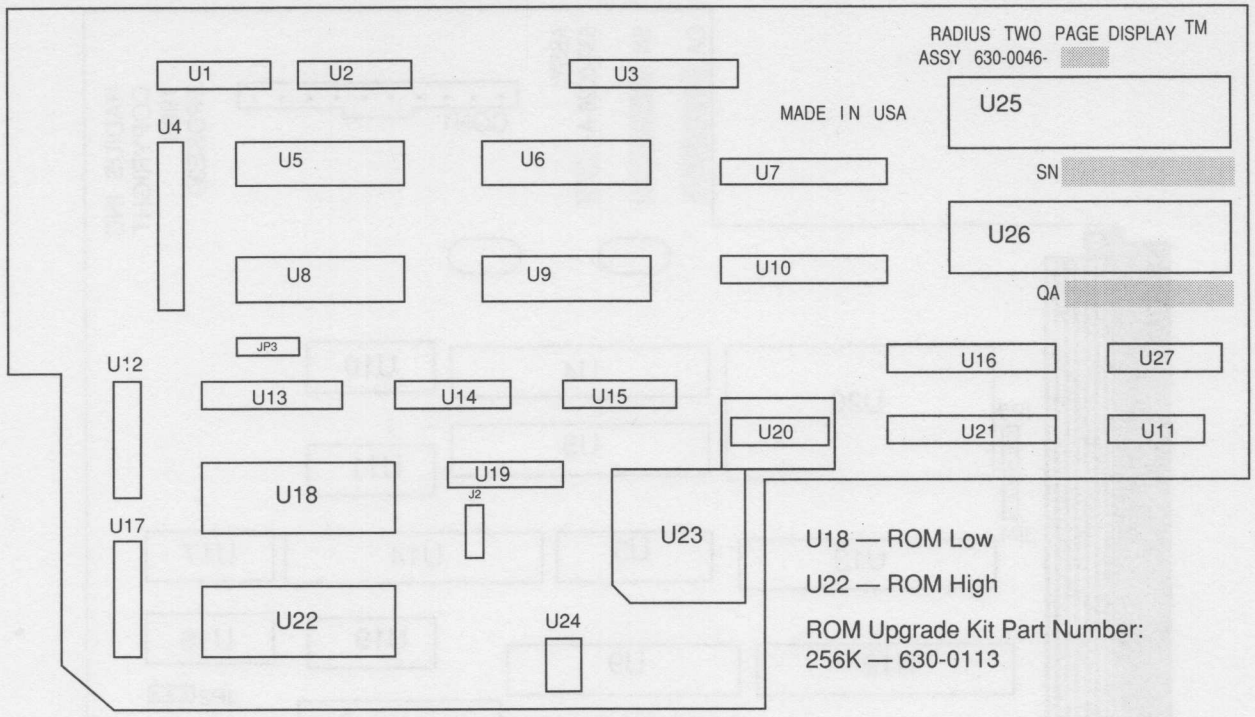


Figure 3-4. TPD-SE Video Interface Card
630-0046

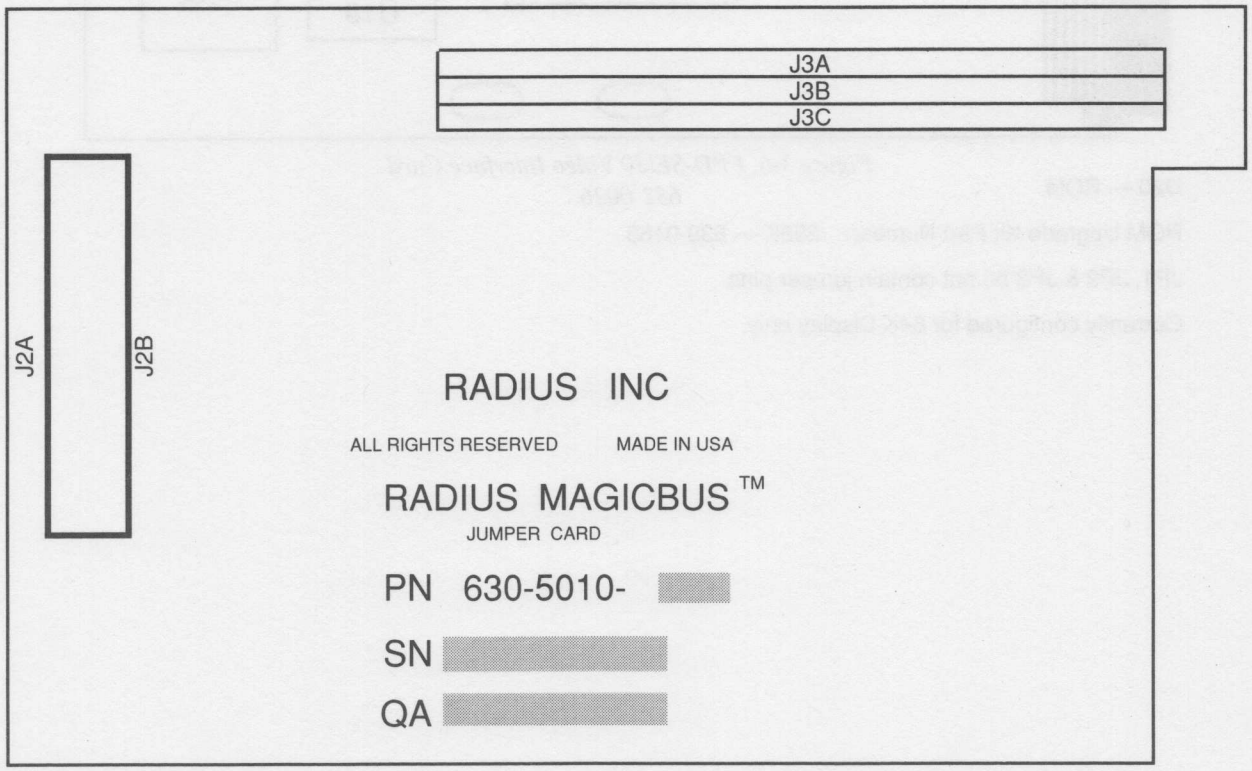


Figure 3-5. Radius MagicBus Jumper Card
630-5010

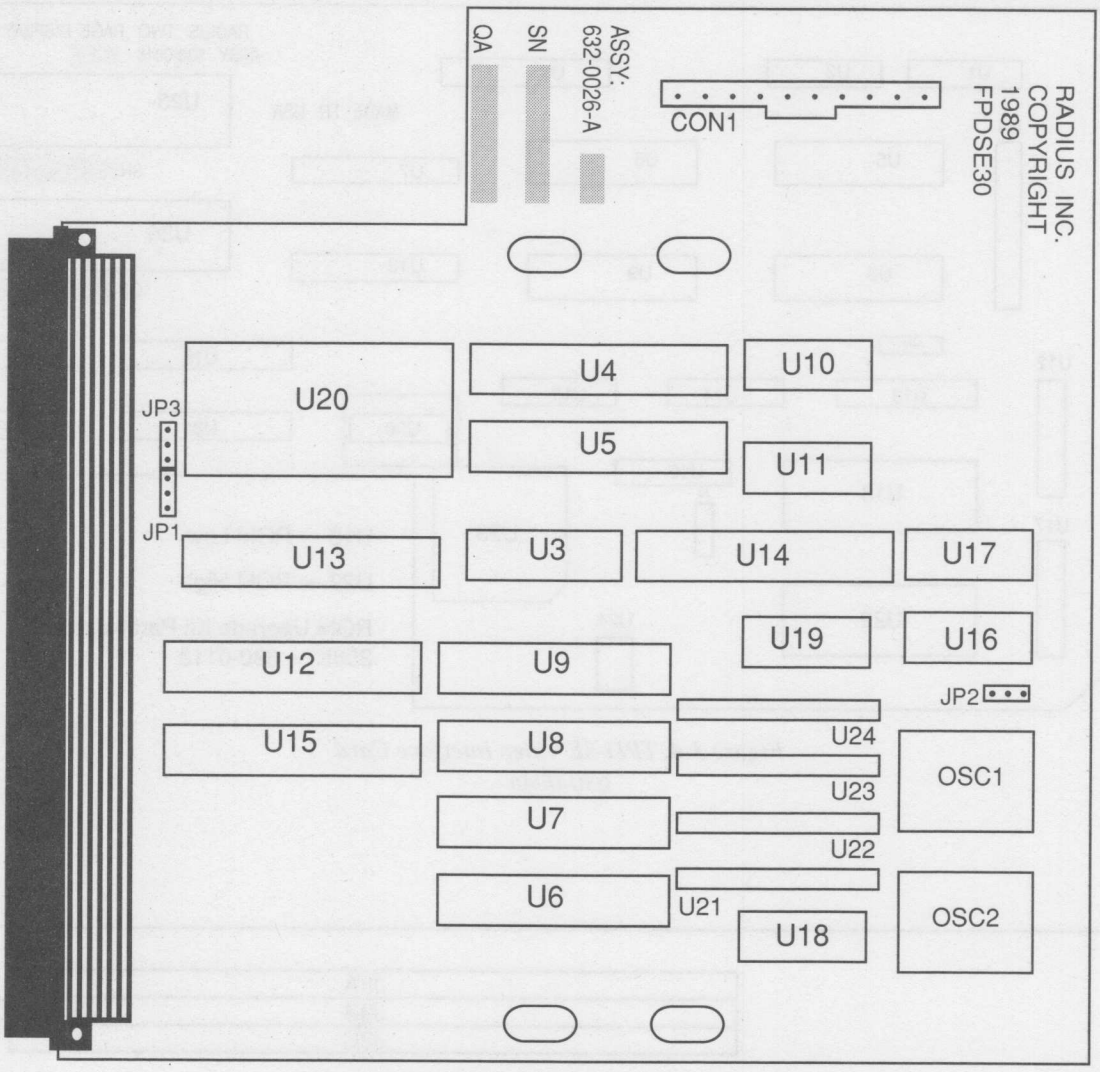


Figure 3-6. FPD-SE/30 Video Interface Card
632-0026

U20 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0163

JP1, JP2 & JP3 do not contain jumper pins.

Currently configured for 64K Display only.

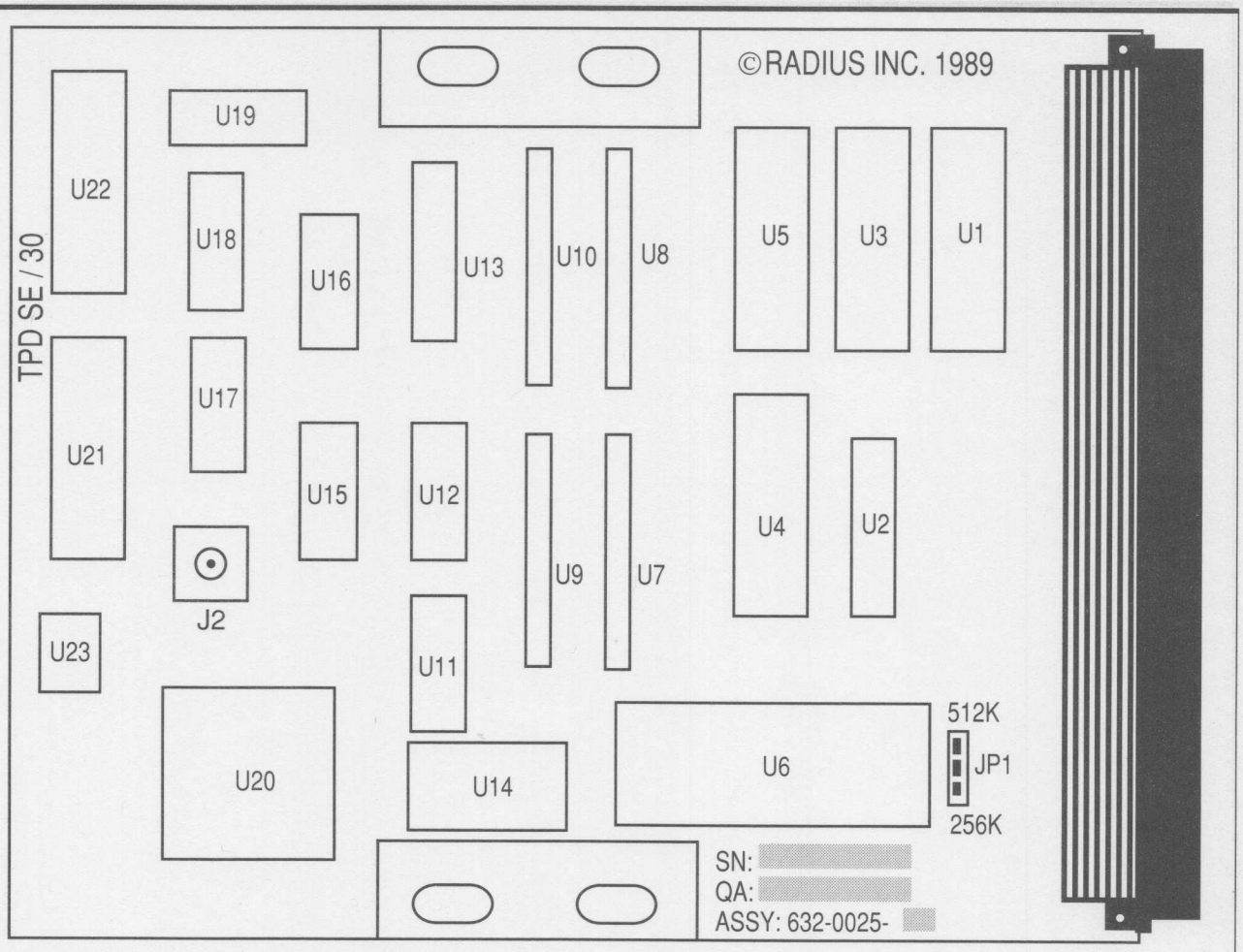


Figure 3-7. TPD-SE/30 Video Interface Card
632-0025

J2 — Internal Video Connector

U6 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0162

FPD/TPD-SE & SE/30 Video Interface Card Installation Notes

Section 4
Macintosh II Installation

- FPD-II Video Interface Card
- TPD-II Video Interface Card
- GS/C Video Interface Card
- GS/C M Video Interface Card
- DirectColor 16/24 Video Interface Card
- QuickColor Graphics Accelerator Card
- QuickCad Graphics Accelerator Card

Macintosh II Product Family Installation Topic Objectives

- List, by part number, the video interface cards that can be used with the Macintosh II.
- Describe how to recognize each of the video interface cards.
- Identify the current ROM version, and part number for the ROM set, for each of the video interfaces.
- List the jumpers on each interface card and the purpose of each.
- Describe or demonstrate the procedure for installation of each of the video interface cards.

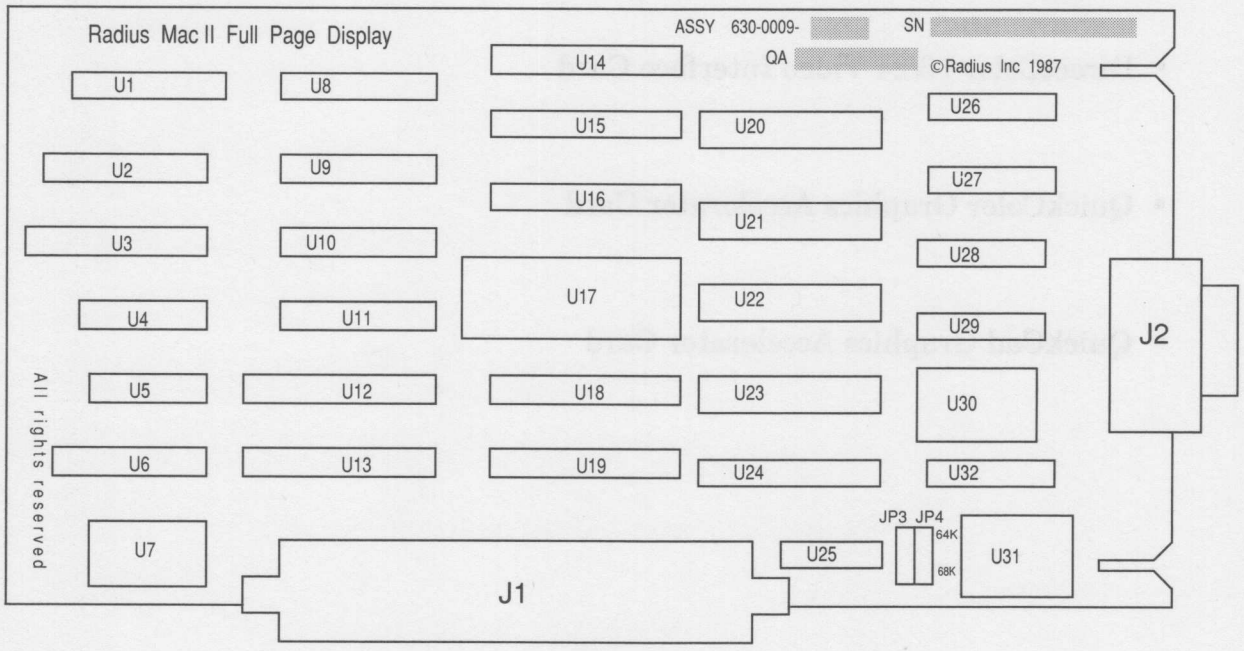


Figure 4-1. FPD-II Video Interface Card 630-0009

JP3 & JP4 — Determine Crystal setting.

U17 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0114

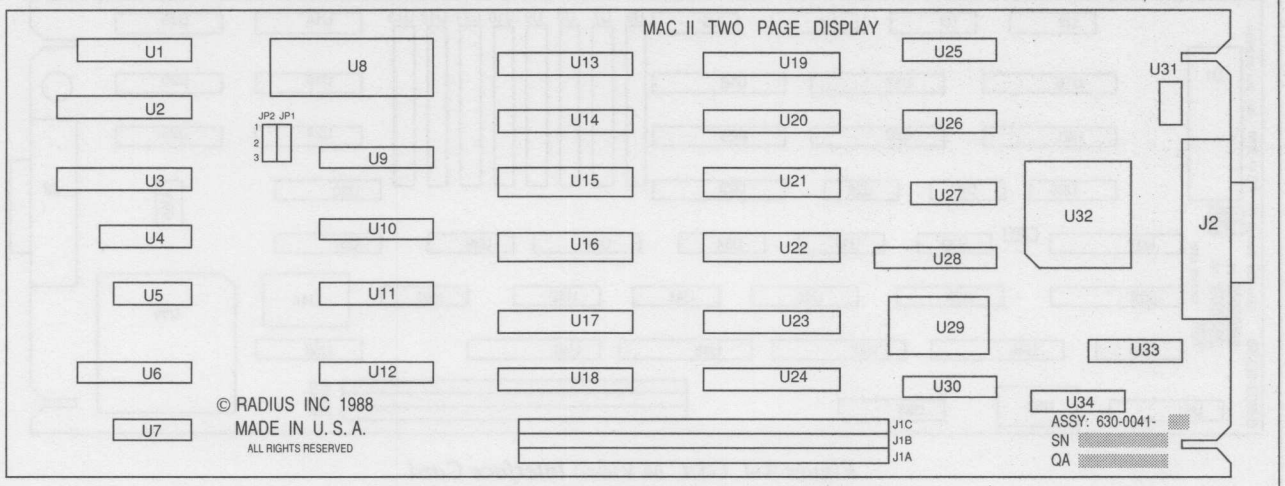


Figure 4-2. TPD-II Video Interface Card
630-0041

JP1 — Pixel Select, set on pins 2 and 3

JP2 — ROM Size, set on pins 1 and 2

U8 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0155

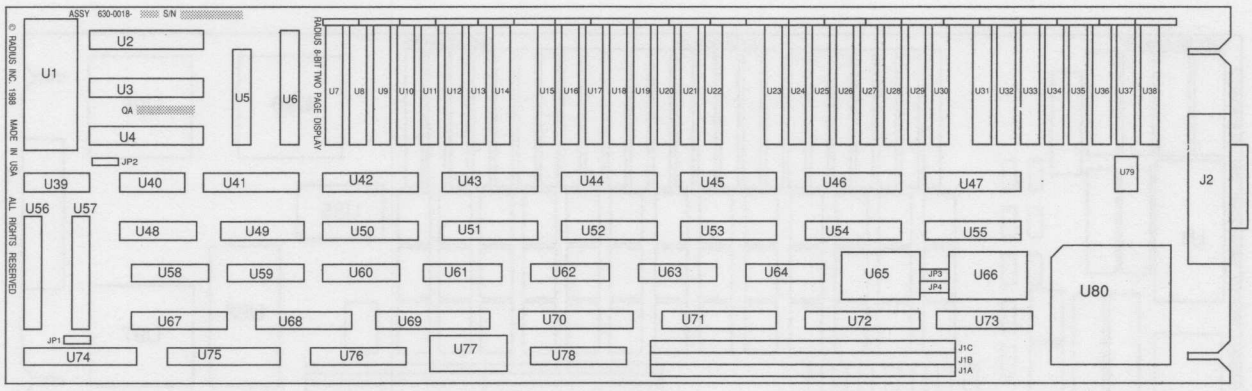


Figure 4-3. GS/C Video Interface Card
630-0018

32 – 256K Video RAM Chips

JP1 — Gray Scale or Color Display
Gray Scale: Cover the 2 right (inner) pins
Color: Cover the 2 left (outer) pins

U1 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0154

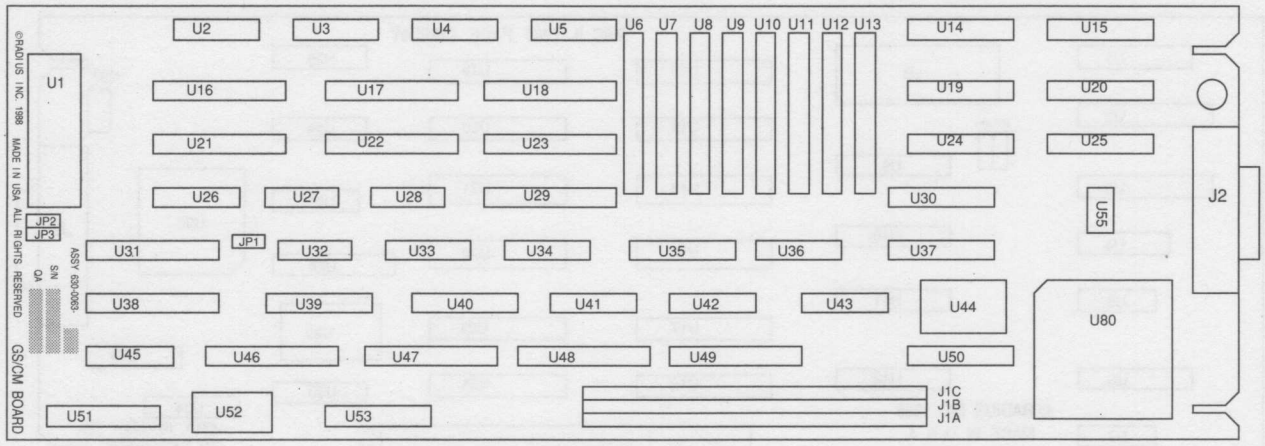


Figure 4-4. GS/C M Video Interface Card
630-0063

8 – 1 Megabyte Video RAM Chips

JP1 — Gray Scale or Color Display
Gray Scale: Cover the 2 right (inner) pins
Color: Cover the 2 left (outer) pins

U1 — ROM

ROM Upgrade Kit Part Number: 256K — 630-0154

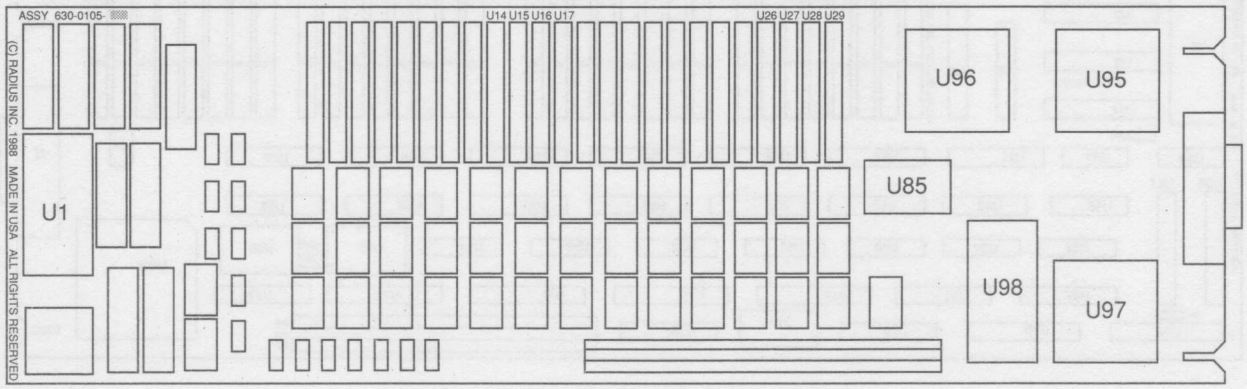


Figure 4-5. DirectColor 16/24 Video Interface Card
630-0105

Operating Mode — DirectColor/16: 1, 8, or 16-bit
DirectColor/24: 1, 8, 16, or 24-bit

U1 — ROM

ROM Part Number — 297-0109

No Jumpers

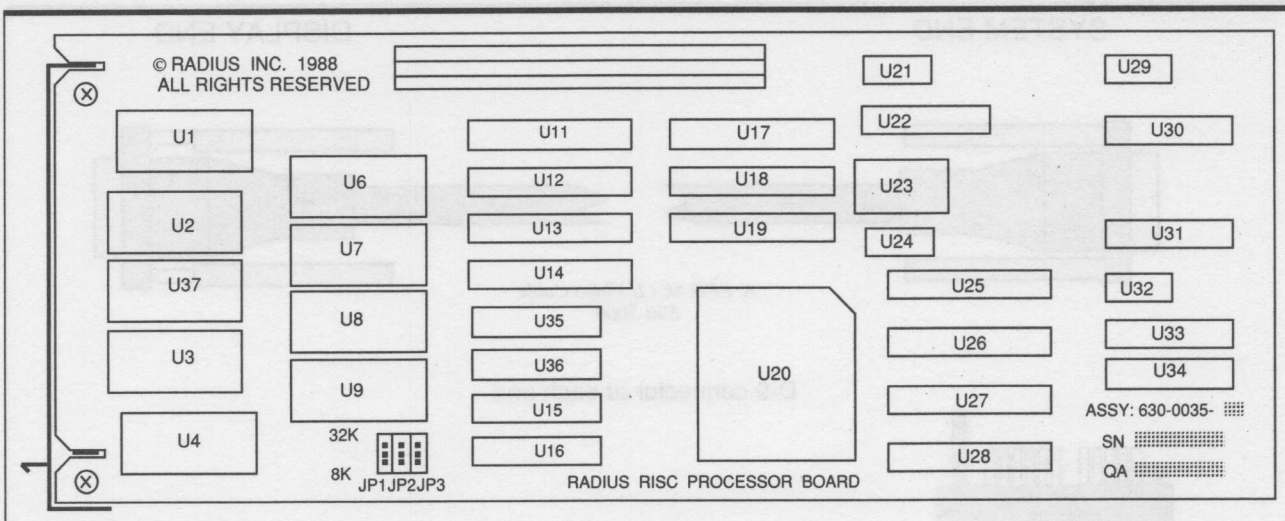


Figure 4-6. QuickColor Graphics Accelerator Card
630-0035

JP1, JP2 & JP3 — Memory Configuration

Set to 8K side

U37 — ROM

ROM Part Number — 297-0041

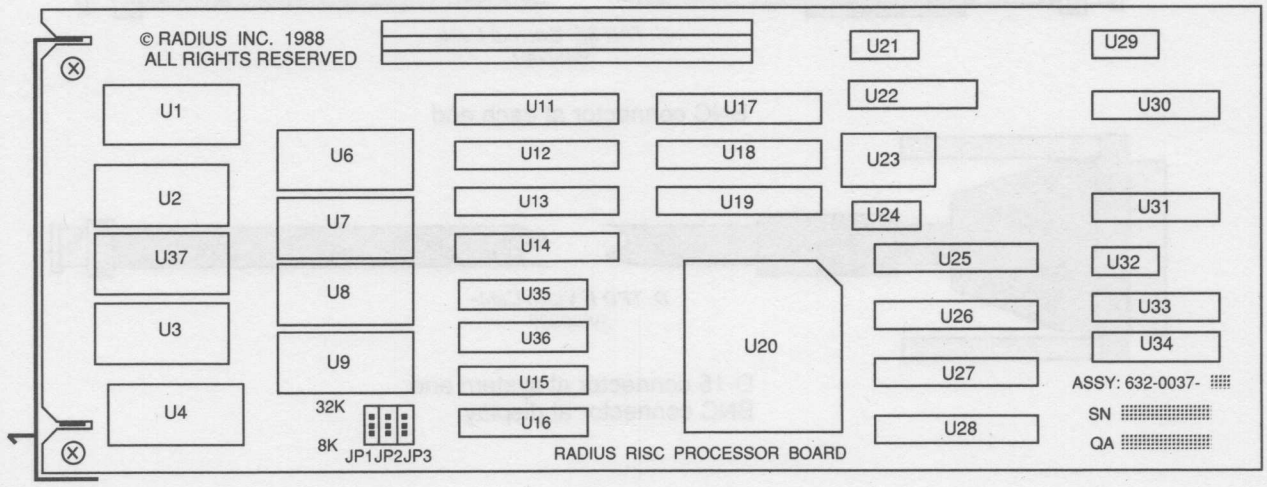


Figure 4-7. QuickCad Graphics Accelerator Card
632-0037

JP1, JP2 & JP3 — Memory Configuration

Set to 32K side

U37 — ROM

ROM Part Number — 297-0211

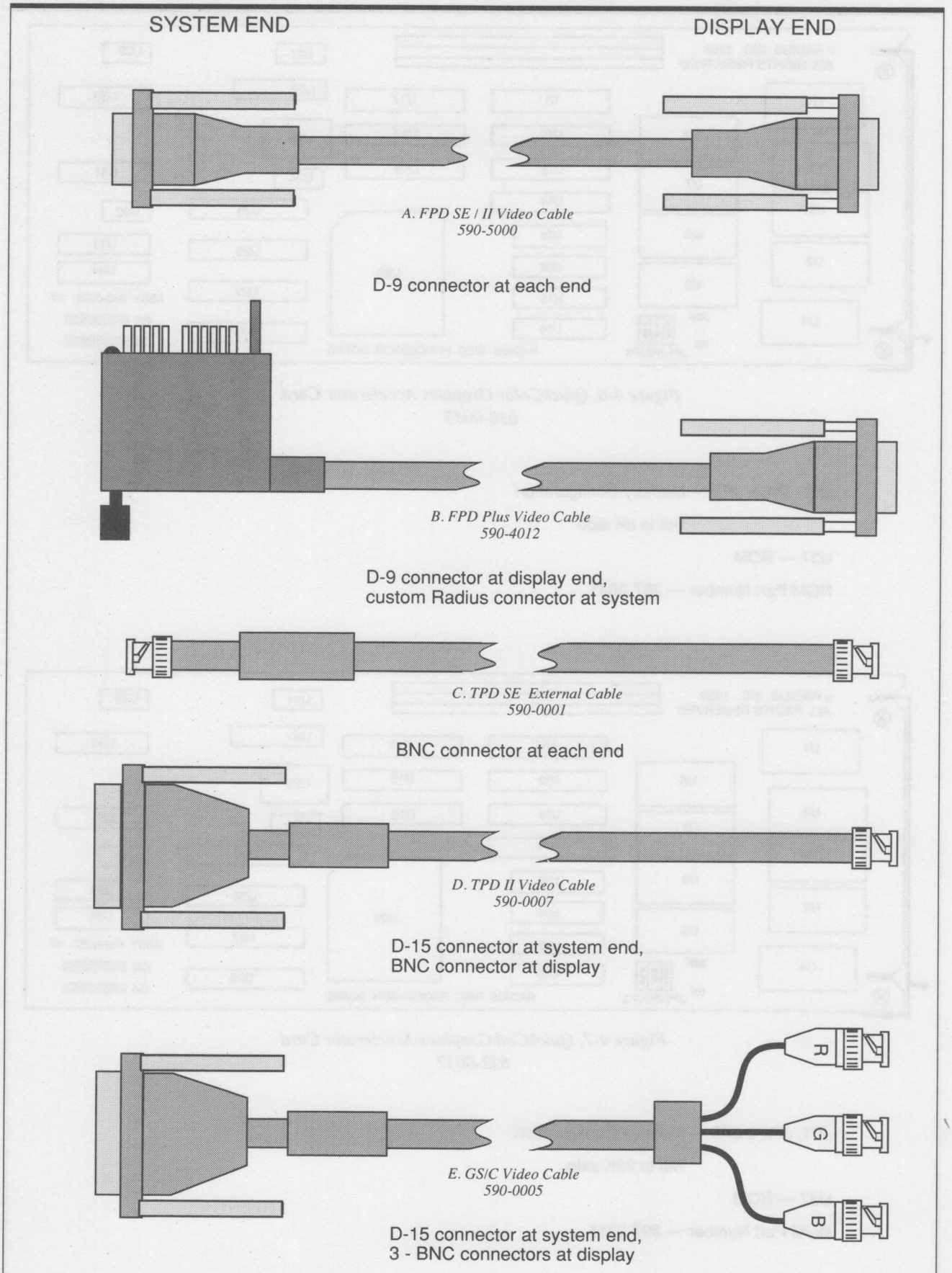


Figure 4-8. Radius Video Interface Cables

Macintosh II Video Installation Notes

Section 5
Display Alignments

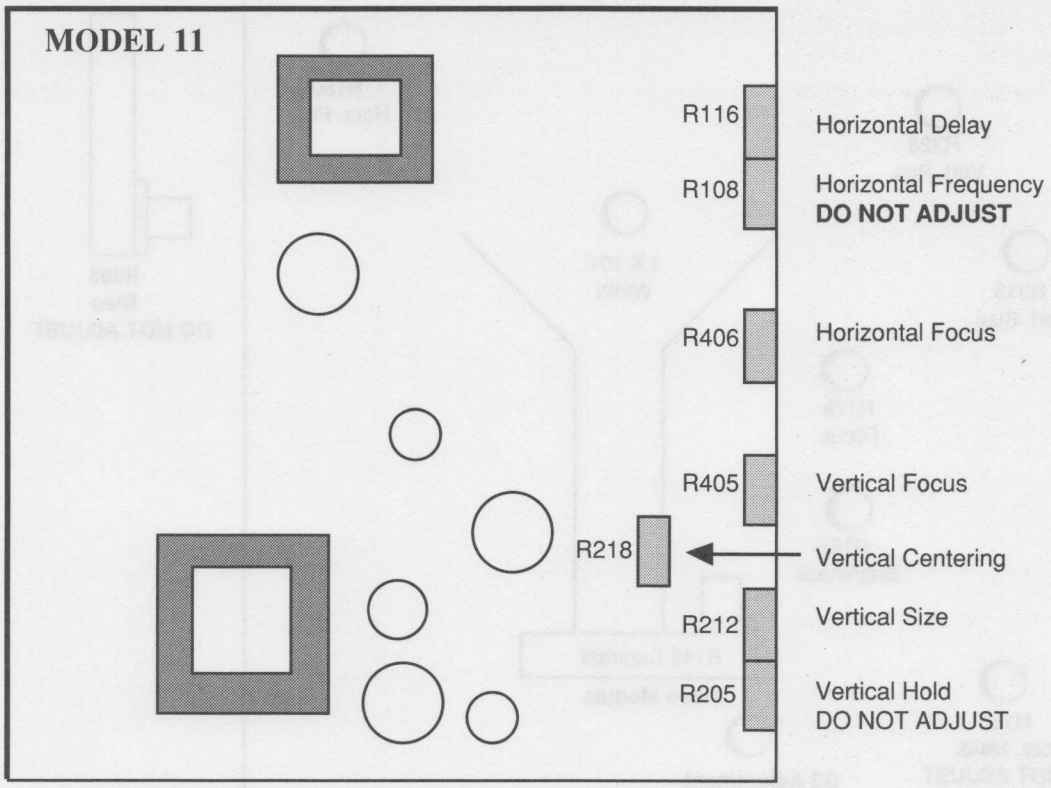
- FPD(68kHz)
- FPD(64kHz)
- TPD Model D
- TPD Model D•F and D•G
- TPD Model D•B
- TPD/21 Model D
- TPD Model Z and Z•B
- Color Display

FPD Alignment • Topic Objectives

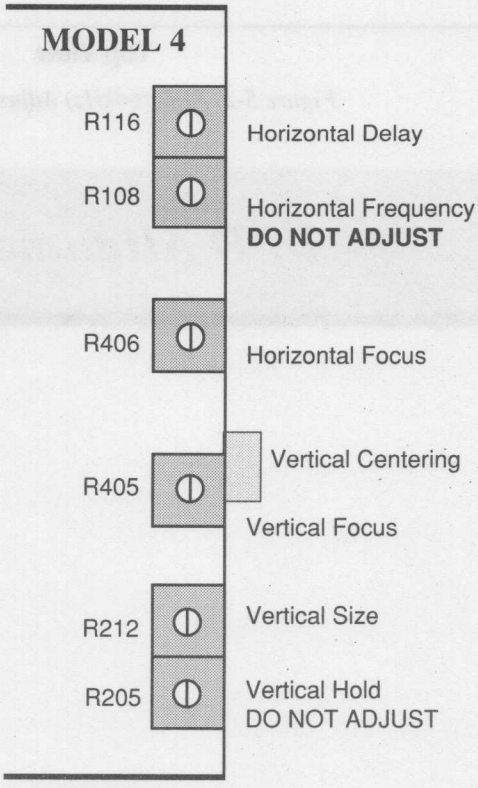
- Locate each of the alignment potentiometers and describe the purpose of each.
- Describe and demonstrate the procedures to perform each of the FPD video adjustments.
- Describe when it will be necessary to perform adjustments on an FPD.
- For each FPD, name the factory set adjustment points that should not be changed.

Order of Adjustment

- Brightness
- Contrast
- Horizontal size
- Vertical size
- Horizontal position
- Vertical position
- Focus



A. Side View



B. End View

Figure 5-1. FPD (68kHz) Adjustment Potentiometers

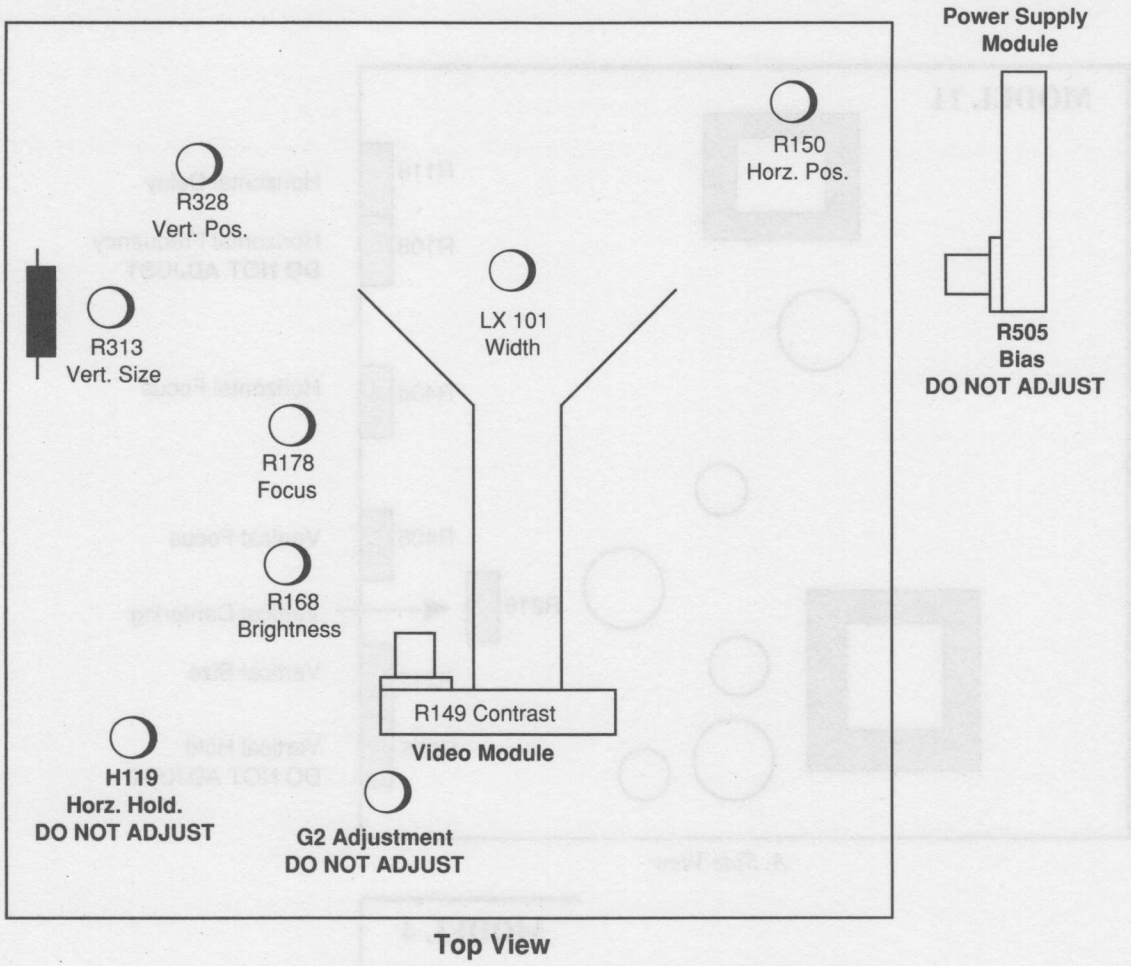


Figure 5-2. FPD (64kHz) Adjustment Potentiometers

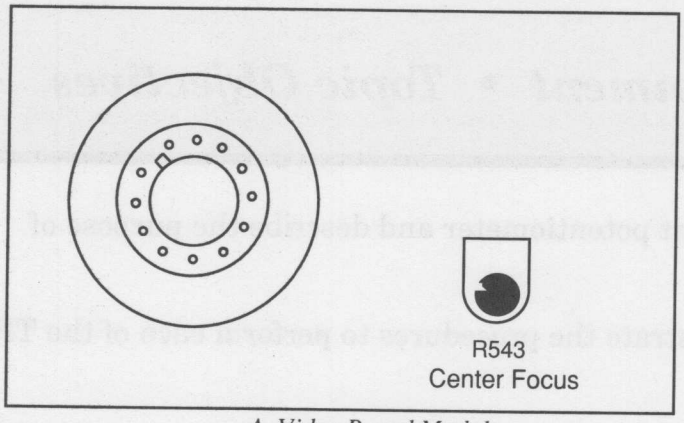
FPD Alignment Notes

TPD Alignment • Topic Objectives

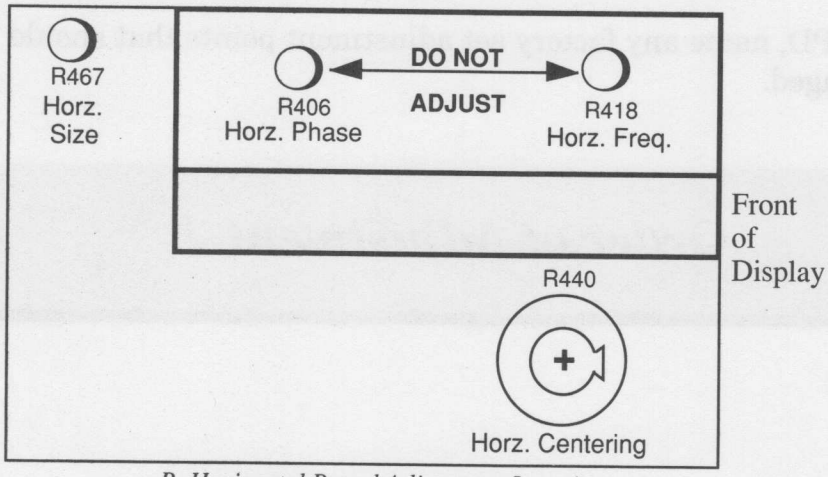
- Locate each alignment potentiometer and describe the purpose of each.
- Describe and demonstrate the procedures to perform each of the TPD video adjustments.
- Describe when it will be necessary to perform adjustments on a TPD.
- For each TPD, name any factory set adjustment points that should not be changed.

Order of Adjustment

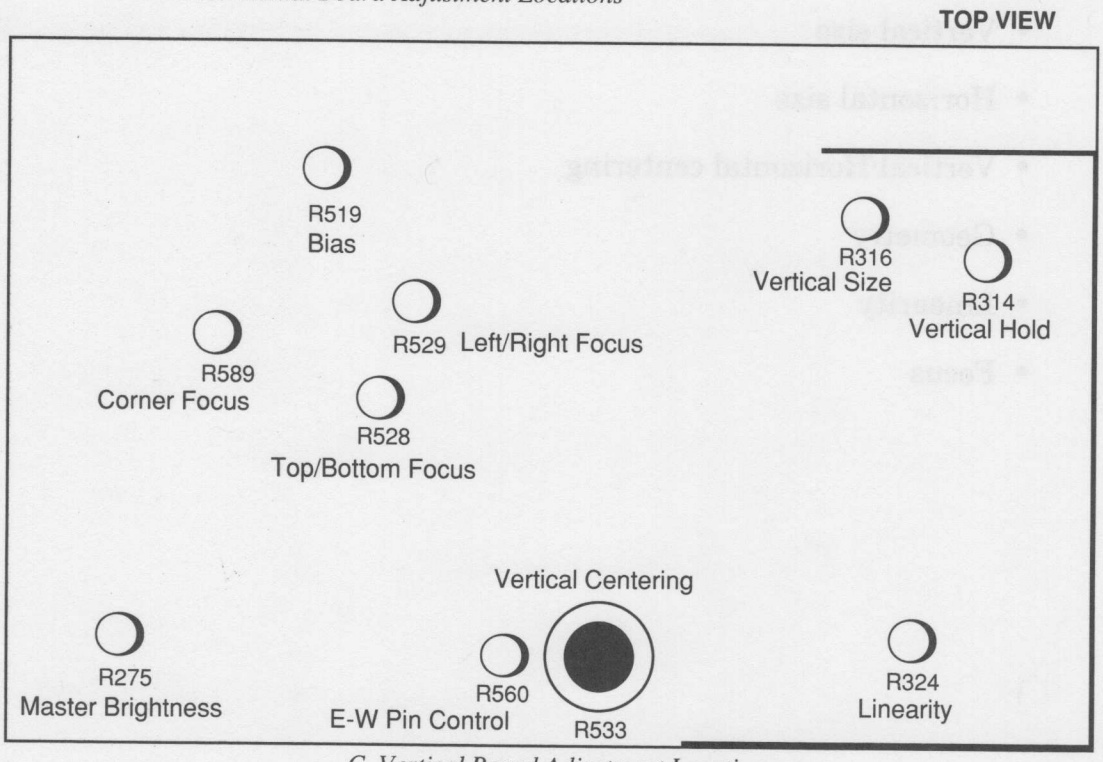
- Brightness
- Contrast
- Vertical size
- Horizontal size
- Vertical/Horizontal centering
- Geometry
- Linearity
- Focus



A. Video Board Module

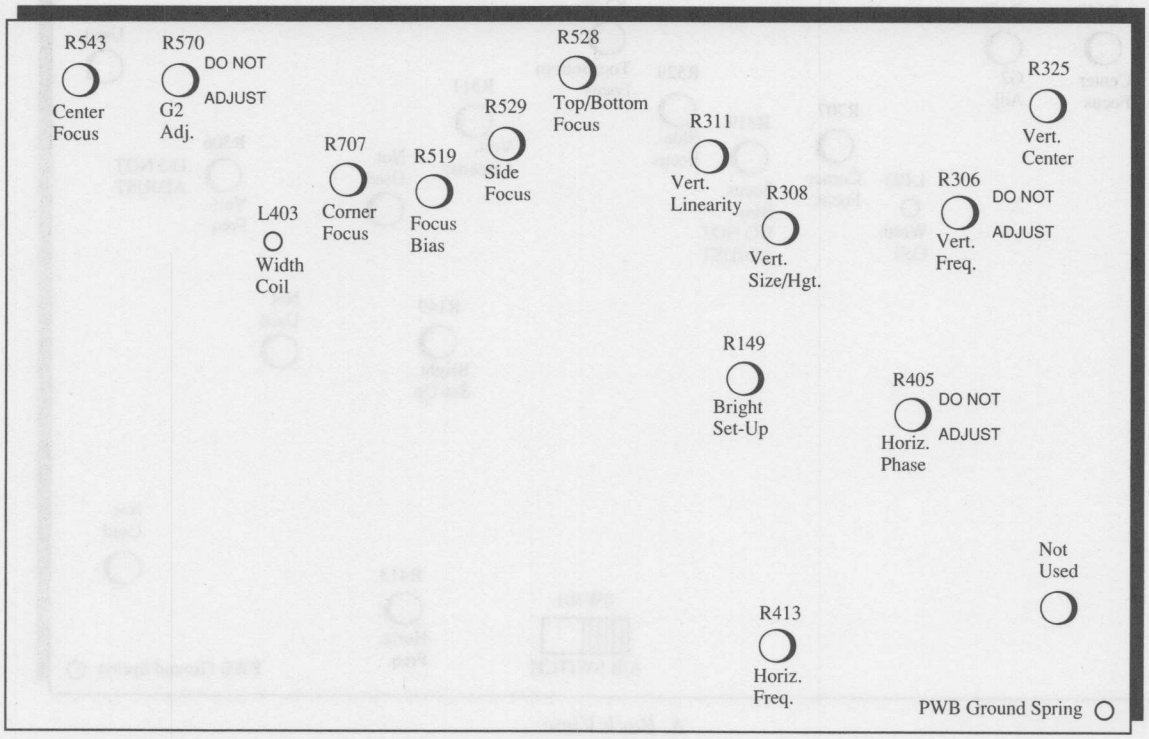


B. Horizontal Board Adjustment Locations



C. Vertical Board Adjustment Locations

Figure 5-3. TPD Model D Adjustment Potentiometers



Back View

Figure 5-4. TPD Model D•F and D•G Adjustment Potentiometers

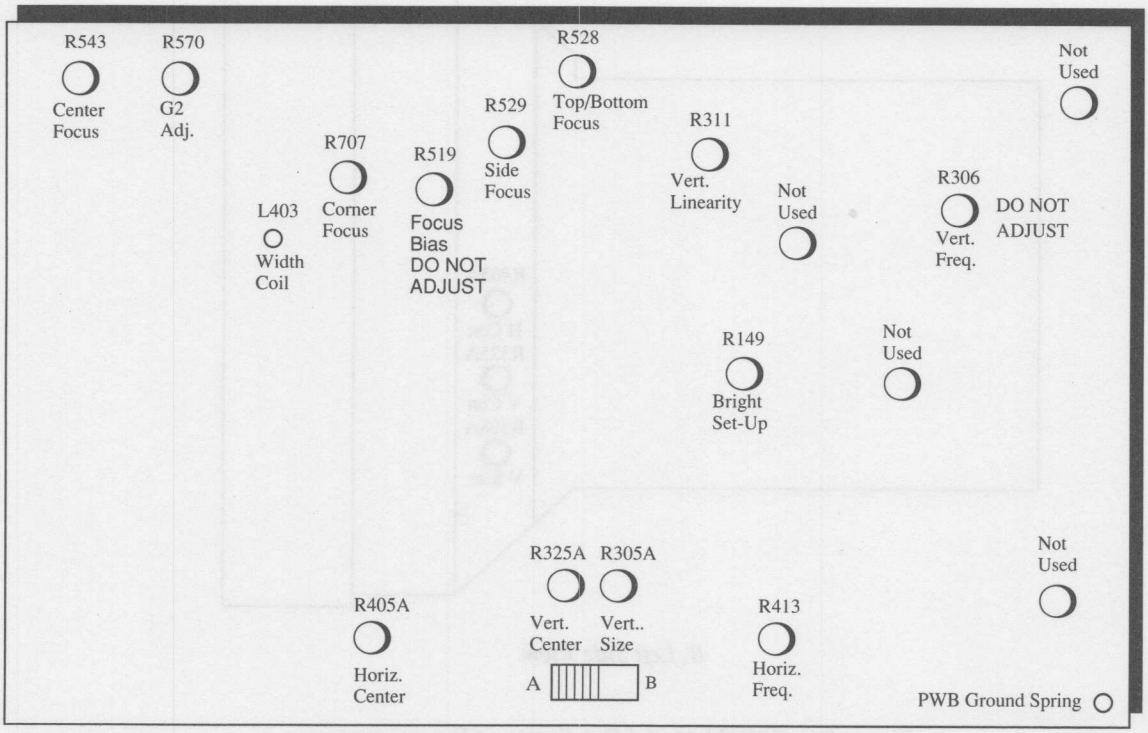
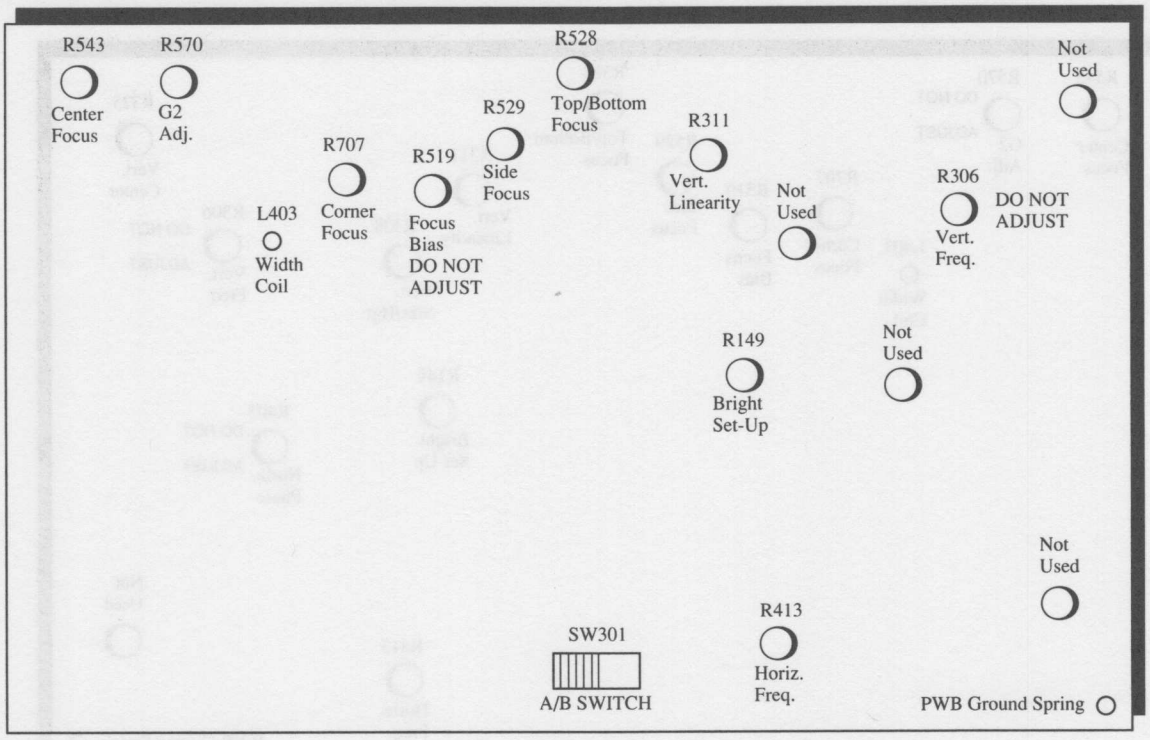
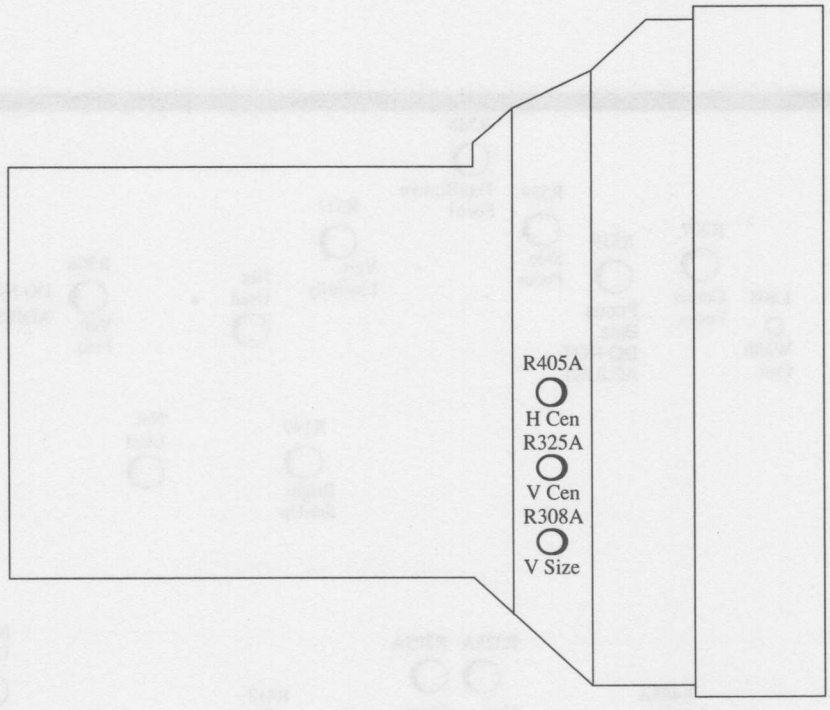


Figure 5-5. TPD Model D•B Adjustment Potentiometers

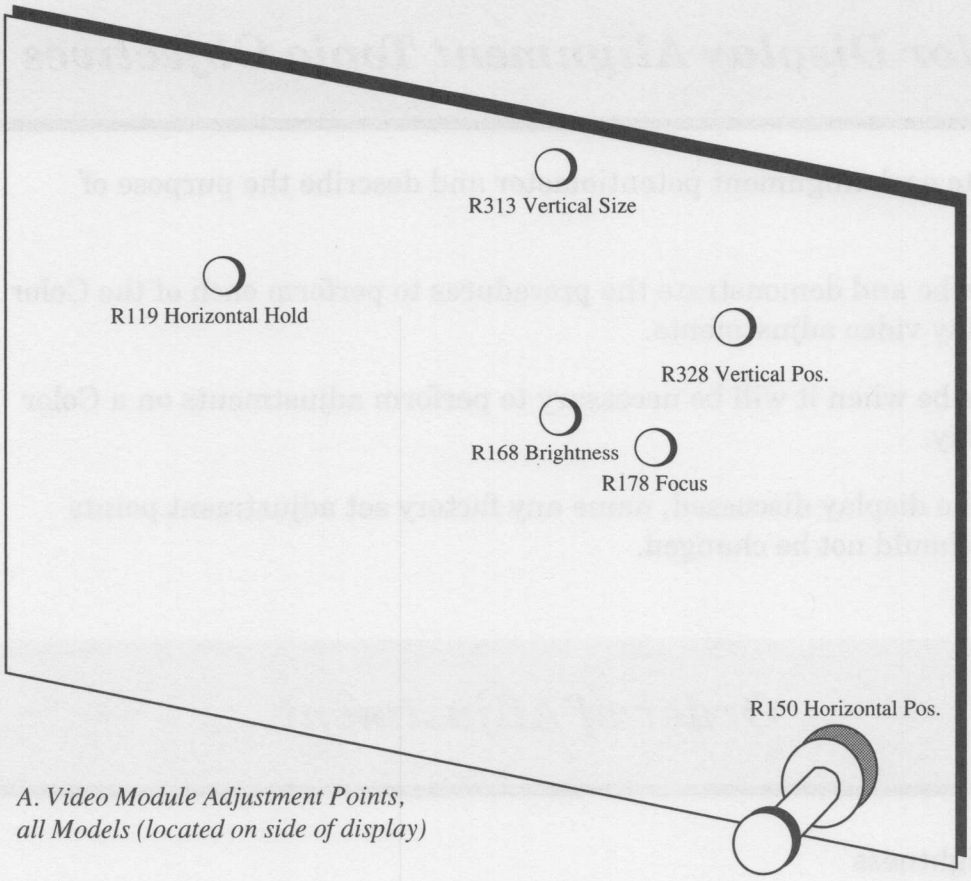


A. Back View

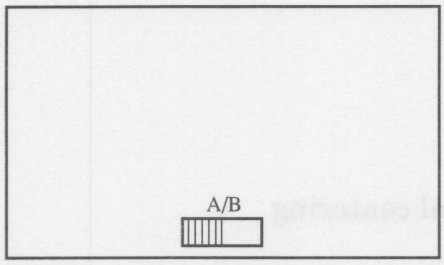


B. Left Side View

Figure 5-6. TPD/21 Model D Adjustment Potentiometers



A. Video Module Adjustment Points, all Models (located on side of display)



B. Rear Panel with A/B Switch, Model Z•B

Figure 5-7. TPD Model Z and Z•B Adjustment Potentiometers

TPD Alignment Notes

Color Display Alignment Topic Objectives

- Locate each alignment potentiometer and describe the purpose of each.
- Describe and demonstrate the procedures to perform each of the Color Display video adjustments.
- Describe when it will be necessary to perform adjustments on a Color Display.
- For the display discussed, name any factory set adjustment points that should not be changed.

Order of Adjustment

- Brightness
- Contrast
- Vertical size
- Horizontal size
- Vertical/Horizontal centering
- Convergence
- Focus

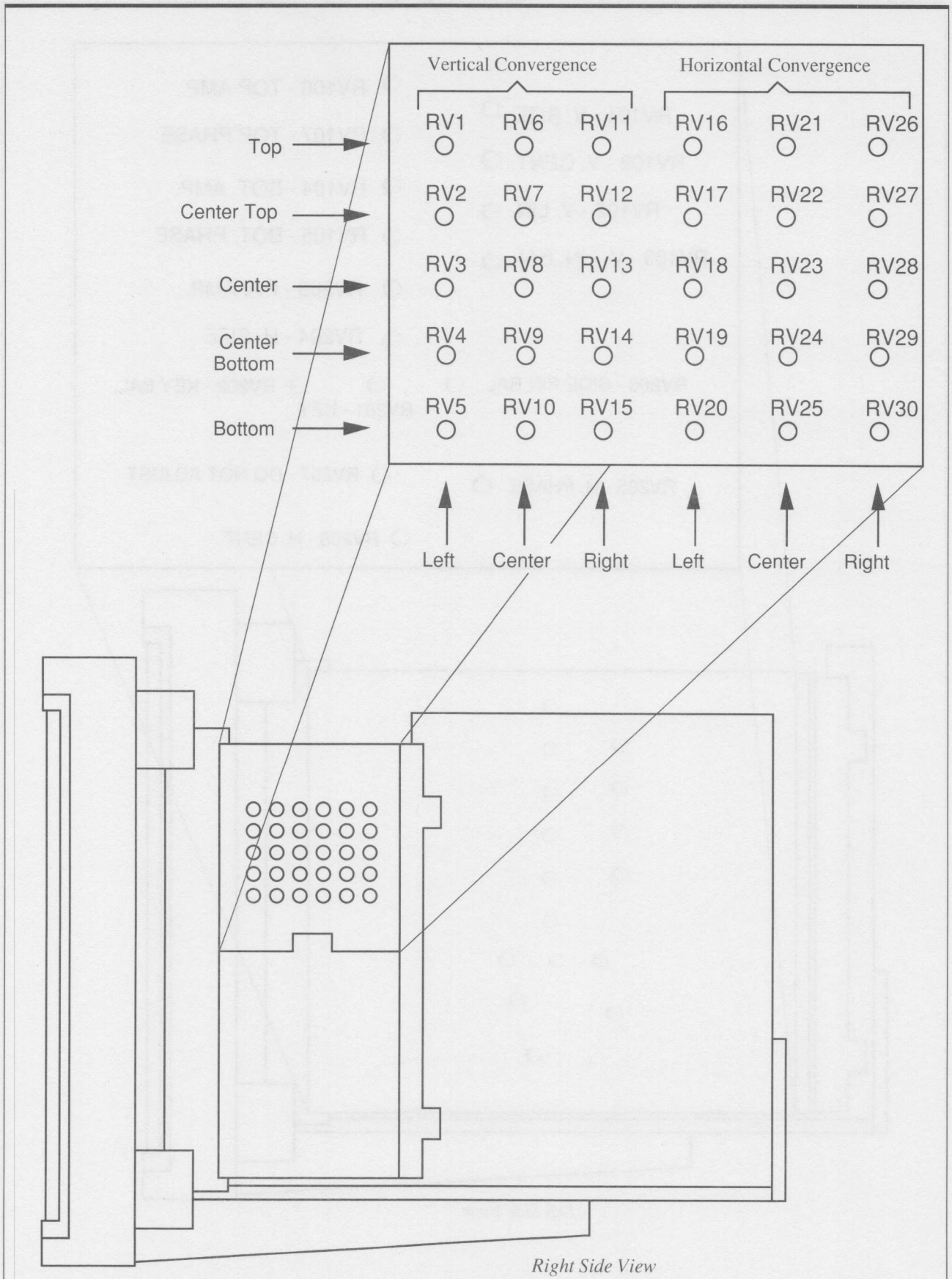


Figure 5-8. Color Display Convergence Adjustment Potentiometers

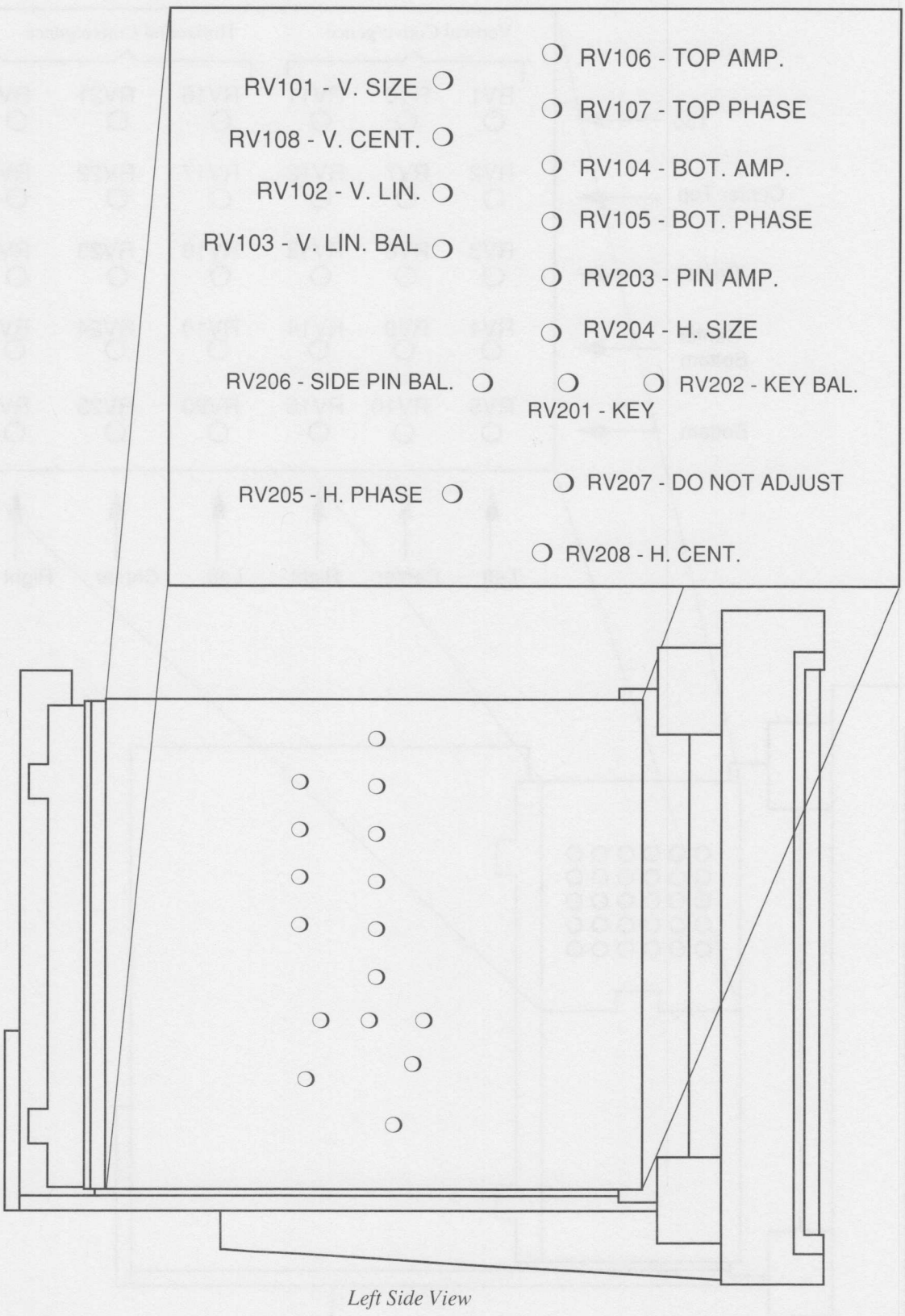

RV106 - TOP AMP.
RV101 - V. SIZE
RV107 - TOP PHASE
RV108 - V. CENT.
RV104 - BOT. AMP.
RV102 - V. LIN.
RV105 - BOT. PHASE
RV103 - V. LIN. BAL
RV203 - PIN AMP.
RV204 - H. SIZE
RV206 - SIDE PIN BAL.
RV202 - KEY BAL.
RV201 - KEY
RV205 - H. PHASE
RV207 - DO NOT ADJUST
RV208 - H. CENT.
Left Side View

Figure 5-9. Color Display Adjustment Potentiometers

Color Display Alignment Notes